

Daily GLOWBUGS

Digest: V1 #105

via AB4EL Web Digests @ SunSITE

Purpose: building and operating vacuum tube-based QRP rigs

[AB4EL Ham Radio Homepage @ SunSITE](#)

%%%% GlowBugs %%%%% GlowBugs %%%%% GlowBugs %%%%% GlowBugs %%%%%

Subject: glowbugs V1 #105

glowbugs

Saturday, September 6 1997

Volume 01 : Number 105

Date: Thu, 04 Sep 1997 22:07:32 EDT

From: kb9iua@juno.com (Kevin L Anderson)

Subject: Dumb Question # XJ74B -- Grid-Block Keying ??

When I look through articles and plans from past Handbooks, QSTs, etc., the low-power transmitters all seem to be cathode keyed. How come? Why doesn't there seem to be plans for low-power transmitters using grid-block keying?

For some reason I have it in my dumb head that cathode keying, and the voltages across the key and resulting on-off nature of the RF generation to be a bad thing compared to my understanding of grid-block keying. Please correct my understanding if I'm wrong.

Someday I have plans of extracting out the TX portion of my HW-16s schematic and see if I couldn't build a grid-block keyed transmitter.

Thanks. Cheers/73. Kevin, KB9IUA

* * * * *

Kevin Anderson, KB9IUA, Rock Island IL USA

kb9iua@juno.com or Kevin.L.Anderson@usace.army.mil

* * * * *

Date: Wed, 03 Sep 1997 00:13:43 -0400

From: Steve Ellington <n4lq@iglou.com>

Subject: Re: Dumb Question # XJ74B -- Grid-Block Keying ??

Grid block keying is of course better but requires more components to produce the

negative grid voltage. Maybe the Handbook was just trying to keep things simple.

Back in the old days, no one paid much attention to keying but now days, just try getting on the air with a mushy signal and you will be flooded with OO reports! I know cuz I did!

73 Steve N4LQ

Date: Fri, 05 Sep 1997 05:46:06 GMT

From: wrt@eskimo.com (Bill Turner)

Subject: Re: Dumb Question # XJ74B -- Grid-Block Keying ??

On Wed, 03 Sep 1997 00:13:43 -0400, Steve Ellington <n4lq@iglou.com> wrote:

>Grid block keying is of course better but requires more components to
>produce the
>negative grid voltage. Maybe the Handbook was just trying to keep things
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>73 Steve N4LQ
>

Steve is quite right, of course. Another factor back in the '50s when I got started was that the typical 6146 output stage didn't have a separate negative voltage source for the control grid bias. The grid bias was derived from rectified grid current, so there wasn't any DC source to switch on and off. The natural thing to do was cathode keying. Some moderately elaborate LCR networks were developed to shape the keyed waveform, and with a little care the signals weren't too bad. Ahhhh... the good 'ol days!

73, Bill W7TI

Date: Fri, 5 Sep 1997 08:30:20 -0500 (EST)

From: "Roberta J. Barmore" <rbarmore@indy.net>

Subject: Re: Dumb Question # XJ74B -- Grid-Block Keying ??

Hi, Steve, Kevin, et al!

On Wed, 3 Sep 1997, Steve Ellington wrote:

> Grid block keying is of course better but requires more components to
> produce the negative grid voltage. Maybe the Handbook was just trying
> to keep things simple.

Yes, especially the small "Novice" rigs. The cost of another rectifier tube, a bit of filtering, and a voltage divider could well have put the cost of parts for a starter transmitter beyond the budget of a young ham--and made explaining how it worked all the more complicated, too.

It may be unclear to folks *why* grid-block keying is "better." After all, no matter how we do it, we're slamming the tube off and on. *It*

doesn't know the difference between being shut down by being biased off or having the plate supply interrupted!

Ahhh, but the *key* does. Cathode keying (or for the adventurous, keying in the B+) runs the *entire* plate current (plus screen, in the case of cathode keying) through the key! Grid-block keying, we quite often hang a largeish "pull-up" (or "pull-down," since it is a negative voltage) resistor to the source of bias, and just short it to ground with the key; the current involved can be *tiny!*

This buys us some good things: key-clicks will be inherently less (smaller current, smaller spark!) and filtering/shaping can be done with simple R/C circuits. So there's your "better." ...If you can tolerate some backwave, it's possible to not quite cut off the tube; gets ugly fast, especially if you're running without any doublers (or Xwhatever) between osc and PA, but makes the transition between "(almost) off" and "on" smoother. This was a 1930s trick to key an eco (VFO) cleanly.

> Back in the old days, no one paid much attention to keying but now days,
> just try getting on the air with a mushy signal and you will be flooded
> with OO reports! I know cuz I did!

In fact, the dope *was* out there, as far back as my oldest HB (1934), and ARRL quite often included some simple filter in their Novice/beginner rigs. But most folks didn't bother; a little clicking from a small rig doesn't get too far and hard keying of a low-power rig tends to get "smoothed" a bit as it flies through the air! (The remaining squareness of keying can make the fleapower sigs easier copy through the noise).

Typical old-time click filter might consist of a balanced pi ("O") network--a .01mF condenser across the key, 2.5mH rfcs in series with each side of the key line, and another condenser across the line on the transmitter side (or one from each side to ground). A series RC network across the key can do about as well. For shaping, some series inductance in the few-Henries range, often shunted by a rheostat, and a condenser to ground did the trick; the "Radio" HB suggested trying the primary of a doorbell transformer, which is a nice low-cost option. The older version of the Meissner Signal Shifter, a design from the mid-late '30s, used such a shaping network. But most home constructors left such refeeenments for the elite; after all, you didn't really *need* it 'til the OO cards or FCC "pink QSLs" arrived! :)

FWIW, my single-6L6 rigs are cathode-keyed and have only the simplest of click & shaping filters, scaled from the RC buffering used in (crude) digital logic switch debouncing filters; and I've not received an OO card yet! So it can be done. (VHF parasitics are the bugaboo in my rig; well on the way to a "Worked All CATV" certificate!)

73,
--Bobbi

Date: Fri, 05 Sep 1997 13:57:28 +0100
From: BOB DUCKWORTH <bob@atl.org>
Subject: ISDN to DNS down and secondary DNS down at the same time, fixed now.

4PM yesterday the ISDN line to the machine(DNS) that figures out where www.atl.org is when you send mail to it went away. It's back now. Most mailers keep trying but if you don't see your message by this

afternoon, it's probably in the bit bucket.
Have a backup DNS in NYC but it was down too :-(
- -bob

Date: Fri, 5 Sep 1997 13:25:50 +0000 (GMT)
From: Jim Glover <psykey@okcforum.org>
Subject: Re: Dumb Question # XJ74B -- Grid-Block Keying ??

Kevin Anderson, KB9IUA, kb9iua@juno.com posted:

> For some reason I have it in my dumb head that cathode
> keying, and the voltages across the key and resulting on-off
> nature of the RF generation to be a bad thing compared
> to my understanding of grid-block keying. Please correct
> my understanding if I'm wrong.

I'm no expert, but I'd noticed the same thing, and I, too,
wondered. I can't resolve the thing about the voltage
across the key, but the more I think about it, the more it
seems to me that whether keying through the cathode, or via
the grid, the effect is the same: essentially zero resistance
when the key is down, and essentially infinite resistance
when the key is up (plus or minus a choke here, and a capacitor
there, perhaps, to keep things looking pretty on the 'scope).

- --Jim WB5UDE

Date: Fri, 5 Sep 1997 14:38:08 +0000 (GMT)
From: Jim Glover <psykey@okcforum.org>
Subject: Re: Dumb Question # XJ74B -- Grid-Block Keying ??

> Back in the old days, no one paid much attention to keying but now days,
> just try getting on the air with a mushy signal and you will be flooded
> with OO reports! I know cuz I did!

I've been tuning around listening a lot for the last few weeks, trying
to improve my CW speed. I've been listening mostly on 40M. I was
surprised to find that there are a disproportionately large number of
questionable signals in the extra subband, 7-7.025 MHz. One of them
was a real doozy-- wooooo-woop-wooooo-woop wooooo-wooooo-woop-wooooo
and I had to re-tune several times because of it drifting right out of
my passband (SSB filter!).

I was asking myself, "Now, why would some of the folks with the highest
class license, have some of the most wobbly signals on the band?" Then
it suddenly dawned on me--cuz they're the ones building and testing
their own gear!

I have a much better attitude about bad signals now. (I just hope folks
whose signals are just plain toooooo out-of-bounds, will get accurate,
honest reports, so they can be aware of, and correct, the problem.)

- --Jim WB5UDE

Date: Fri, 5 Sep 1997 13:06:23 -0700 (MST)
From: Jeff Duntemann <jeffd@coriolis.com>
Subject: 12V Space Charge Tubes, Part IV

Hi gang--

Deep in the magnificent depths of the first edition of the ARRL VHF Manual (1965) I found yet another instance of the use of 12V tubes. These are a little different: They're 12V nuvistors. Actually, they're nuvistors with 24V filaments that have sufficient transconductance at 12V B+ to operate usefully.

The 50 Mc converter described on page 84 uses three 8056 nuvistor tubes for single conversion from 50 Mc down to 600 Kc. The design looks good, though *very* tight physically, and it requires six slug-tuned ceramic coil forms and a BCB ferrite loopstick!

This could be tricky to build (and I didn't look to see what the 8056 goes for these days, if it's available at all) but the text notes that this is a very high performance converter, and for serious 6M AM work, a box like this in front of a 75A4 could be potent indeed. I'd almost not waste it in front of one of today's all-plastic crapparino car radios!

- --73--

- --Jeff Duntemann KG7JF
Scottsdale, Arizona

Date: Fri, 5 Sep 1997 13:29:04 -0700 (MST)
From: Jeff Duntemann <jeffd@coriolis.com>
Subject: Regenerative tunable IF: 14-18 Mc

Hi gang--

While looking for 6M converter circuits last night I ran across an interesting circuit in the ARRL's 1965 VHF Manual, page 44. It's a tunable IF for 14-18 Mc, to be used after crystal controlled converters for VHF AM reception. The circuit is relatively simple: a 6CB6 RF amp, a 6CB6 detector, and a 6CX8 two-stage audio amp.

What's really intriguing about the circuit is that it operates in three modes:

1. Straight through, typical superhet style, with gain controllable by controlling the screen voltage of the detector stage. This is like the "AM mode" in the canonical regen receiver.
2. Regenerative mode, for CW. This, again, is just like a regen receiver used for CW reception.
3. Superregenerative mode, for VHF AM. Gain goes through the roof, stage broadens, and the usual rushbox racket appears.

I'm wondering if anyone has had any experience with this circuit or anything like it. It's not tough to build, and I'm assuming I could also use it for 20 Mc CW. (I would primarily use it for 6M AM.)

Any thoughts? I'm hoping to move to an all-homebrew empty state 6M AM station, and this looks like the simplest useful solution on receive.

- --73--

- --Jeff Duntemann KG7JF
Scottsdale, Arizona

Date: Fri, 05 Sep 1997 16:40:45 EDT
From: kmlh@juno.com (kmlh @ juno.com)
Subject: Re: Dumb Question # XJ74B -- Grid-Block Keying ??

Both of you have excellent points. However the answer is really too long to go into here. I suggest that anyone interested obtain copies of the ARRL Handbook from as late as the 1970's to as far back to at least 1940 (my oldest copy).

They had a complete chapter devoted to keying back then and covered the complete spectrum from A to Z.

I was originally going to post a technical answer but after reading thru a few Handbooks I felt overwhelmed! The subject has been around and debated forever and the details are too much for a simple E-Mail posting.

I also remember many superb QST articles over the years and believe I have copied and saved most of them. If there is sufficient interest I will try and list them and also make copies available.

Then we can discuss specific circuits, articles, and build from there.

I also have:
QST from 1932-current
CQ all
HRM all
73 all

I love this group!

73....Carl KM1H

On Fri, 5 Sep 1997 13:25:50 +0000 (GMT) Jim Glover <psykey@okcforum.org> writes:

>Kevin Anderson, KB9IUA, kb9iua@juno.com posted:
>

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>there, perhaps, to keep things looking pretty on the 'scope).
>
>--Jim WB5UDE
>

Date: Fri, 05 Sep 1997 17:27:34 +0100
From: BOB DUCKWORTH <bob@atl.org>
Subject: Re: Dumb Question # XJ74B -- Grid-Block Keying ??

de Bob

Cathode keying, all the current
Grid keying, a tiny bit of current

Date: Fri, 5 Sep 1997 16:04:14 -0500 (CDT)
From: Spencer Petri <spetri@e-tex.com>
Subject: Re: Dumb Question # XJ74B -- Grid-Block Keying ??

>
>I've been tuning around listening a lot for the last few weeks, trying
>to improve my CW speed. I've been listening mostly on 40M. I was
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>was a real doozy-- wooooo-woop-wooooo-woop wooooo-wooooo-woop-wooooo
>and I had to re-tune several times because of it drifting right out of
>my passband (SSB filter!).
>

Sounds like that could have been a Cuban station. Some of those folks have
whoop-de-whoop-de signals.

Grid block keying takes away all the fun of getting a bad shock off the key.
That'll wake you up and get you going!

73 de Pete WA5JCI EM21 "the future will be better tomorrow"
.....
6 Mtr -- WAS #490, WAC CW, DXCC/91 Countries, VUCC #361/623 Grids

.....
2 Mtr -- 36 States -- VUCC #346/183 Grids

Date: Sat, 6 Sep 1997 00:02:28 +0000
From: Sandy W5TVW <ebjr@worldnet.att.net>
Subject: FS/FT: SX-71/T-60

Hallicrafters SX-71 receiver, working well! Complete with all original knobs. Cosmetics about an 8...all original cabinet paint. \$125 OBO plus packing/shipping.

Knight T-60 transmitter. Working well on all bands but 6 meters. Cosmetically about an 8 with all original knobs/meter. \$60 OBO plus packing/shipping.

73,

E. V. Sandy Blaize, W5TVW
"Boat Anchors collected, restored, repaired, traded and used!"
417 Ridgewood Drive,
Metairie, LA., 70001
ebjr@worldnet.att.net
Looking for: Hallicrafters SR-75 Transceiver
RK-34(VT-224) tubes, Butternut HF2V antenna*

Date: Sat, 6 Sep 1997 18:10:51 -0500 (CDT)
From: Bob Roehrig <broehrig@admin.aurora.edu>
Subject: Cheap/easy/effective AGC

I was playing around with the navy RCH receiver recently obtained and. as with all pre-product detector receivers, I get frustrated by trying to use it in the CW mode with no AGC.

In this particular unit, there is conventionally derived rectified IF AGC in the AM mode, but in CW, the AGC bus is shorted directly to a negative bias supply (derived from a 50 ohm resistor in the HV xfmr center tap to ground). In most receivers, the AGC would simply be shorted to ground.

Not wanting to really modify this unit, I thought I'd try audio-derived AGC, and it is outstanding. This simple circuit could be applied to anything from an ARC-5 to a HRO.

The circuit is simply a conventional half-wave voltage doubler. I used a pair of 3.3uf 50V caps and a pair of 1n4001 diodes. I tack soldered a 2K pot across the 600 ohm output transformer terminals (one is grounded) and that feeds the circuit. The output is loaded with a 470K resistor and connected to the AGC bus. In this receiver, that is accomplished by removing the wire to the mode switch that comes from the fixed bias source and connecting the detector output to that switch lug.

I tuned in a fairly strong SSB station on 40 meters, then cranked up the gain until the signal started to distort, then adjusted the 2K pot until I started to get AGC action. Thereafter, the gain could be cranked up all the way with no distortion and all signals in the round-table sounded identical in level.

AS I said, this same scheme should work with a great many receivers. The pot value should be a few times higher than the output impedance to prevent loading. This circuit has a time constant of around 1.5 seconds decay, which works great for both CW and SSB.

E-mail broehrig@admin.aurora.edu 73 de Bob, K9EUI
CIS: Data / Telecom Aurora University, Aurora, IL
630-844-4898 Fax 630-844-5530

End of glowbugs V1 #105

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Created by **Steve Modena, AB4EL**
Comments and suggestions to **modena@SunSITE.unc.edu**
